

## **REMARKS**

The Office Action raised an issue with regard to the Information Disclosure Statement. The references were cited in an Office Action in a corresponding Japanese patent application but were not applied to deny any patentability by the Japanese Patent Office.

As the Examiner is aware this is a very close art with a large number of skilled scientists and engineers attempting to provide improve light efficiency for metal halide lamps while ensuring an economical and competitive cost procedure. As can be appreciated, stringent thermal design criterion must be complied with to achieve this purpose in the production of the electrodes. The present invention has found that while manufacturing and affixing coils of a refractory material, a step of cutting the coils wound around a mandrel with the mandrel removed subsequently permits a highly accurate respective positioning of the tips of the electrodes within controlled lengths while also addressing the location and position of cold spots within the discharge lamp body. For example, the present invention can provide an extended life to a discharge lamp with the positioning of the respective ends of the coils of each electrode member at a distance of less than 2.5 mm. Thus, an extended life and highly effective discharge lamp can be used for projection purposes, for example, with an LCD projector. As set forth in Table 1 on page 13, the comparison advantages of the present invention over that of the conventional discharge lamps is verified.

The Office Action combined the *Matthews et al.* European patent application publication 579429 with the teachings of the *McCarty et al.* U.S. Patent No. 4,291,444 and the teachings of the Japanese laid-open patent application No. 58-5944 to reject claims 16-18 and 26-27 under 35 USC § 103.

The Office Action cited the *Matthews et al.* for teaching the manufacturing of an anode with either a cylindrical sleeve, as shown in Figure 3, or a wound metal wire. *Matthews et al.* further suggests to a person of ordinary skill in this field, in Col. 8, line 33 et al., that cutting the ends of the wire windings is preferably avoided by using only one length of wire that can be wrapped back upon itself. As shown, the core of the anode and the wiring are melted into a hemispherical tip, and there is no particular concern suggested in the specification as to an express length between the anode and cathode electrodes. Rather, the concern is the removal of any sharp points from the anode end in providing a hemispherical shape to minimize an erosion of the anode.

The *Matthews et al.* reference does not disclose a removal step for removing a core member after a cutting step in the manner of the present invention, nor removing any distortion that may be created in the wires that are wound upon the core member. In the present invention, refractory wires are carefully formed into a plurality of layers wound in the same turning direction and are then stabilized on the mandrel or core member. The winding is then cut to form a flat perpendicular end face while on the core member. Subsequently, the core member is removed and an electrode rod made of a refractory metal is inserted. To prevent any dislocation or movement that would alter the flat tip location of the electrode, the windings can be welded and affixed to the electrode rod. In the formation of the discharge lamp, a pair of identical electrodes from the same manufacturing processing steps can be mounted within a glass tube while maintaining a controlled position between the coil members and the cooler sections of the anchor location in the glass tube. Additionally, the length between the ends of the respective electrodes can be 2.5 mm or smaller while still increasing the light efficiencies and life of the discharge lamp.

The Office Action acknowledged the deficiencies in the *Matthews et al.* reference and in turn cited the *McCarty et al.* U.S. Patent No. 4,291,444 for winding a tungsten coil about a mandrel

with subsequent heat treatment. As can be seen, the *McCarty et al.* reference does not suggest a tight winding of one or more coil layers but rather is concerned about increasing the temperature of the heat applied to the wire mandrel without experiencing any molybdenum contamination. Thus, the actual teaching in *McCarty et al.* is to coat the molybdenum mandrel to be able to increase the maximum temperature that can be applied through a heat treatment, see Col. 1, lines 34-45.

The *Mori* laid-open Japanese patent application 58-5944 was cited for the step of cutting a wound coil wire that was extended an electrode wire having both a highly wound part and a loosely wound part. As can be seen from Figure 3 in the *Mori* reference, the cut lengths are for cutting not actually a "core" member as described in our present specification which could be dissolved but rather for cutting an electrode rod upon which a wire has been wound.

Thus, while *Mori* may teach a method to enable mass production of electrodes, it does not teach cutting a coil and core member which in fact is the mandrel in accordance with the present invention, nor does it suggest forming a perpendicular face to the coil as a result of the cutting of the wound coils. In the present invention, the core member is cut with the two or more layers of refractory metal wire having a perpendicular flat face and then the core member is removed.

"Most if not all inventions arise from a combination of old elements ... Thus, every element of a claimed invention may often be found in the prior art ... However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention ... Rather, to establish obviousness based on a combination of elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant ... Even when obviousness is based on a single reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference ... The motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved ... "

*In re Kotzah*, 55 USPQ2d, 1313 (Fed. Cir. 2000)

Applicants respectfully submit that in view of the close nature of this art that improvements, as offered in the present claims, are deserving of a patent, since they provide an improved and better method of making electrodes and the resulting manufacturing of discharge lamps. None of the cited references provide a teaching reference that would motivate or provide direction for a person to replicate the steps of the present invention. For example, the *Matthews et al.* disclosure teaches the formation of a different form of anode of a large hemispherical configuration relative to a smaller cathode electrode. The *McCarty et al.* reference is concerned with contamination at elevated temperatures from the mandrel. The *Mori* disclosure does not use a mandrel, but rather uses the actual electrode rod and is not concerned about a perpendicular cutting of multiple layers of wound metal wire. None of the reference recognizes the ability to extend the life of a discharge lamp with a gap less than 2.5 mm of identical electrodes.

The Office Action further added the *Chiba* Japanese laid-open patent application 63-313463 to reject claims 19-20 and 28-29 of the present application. The *Chiba* reference was cited for the ability to remove a tungsten coil by dissolving a molybdenum core. As can be readily seen from Figures 2-5 of this reference, the tungsten wire itself appears to form a resistance wire and not an electrode for a discharge gap. Thus, the *Chiba* reference does not address the deficiencies of the teachings of the other references under 35 USC § 103.

Thus, even hypothetically accepting the combination of all references, there is still no teaching to a person of skill in this field to provide the particular cutting step of the present invention in which the mandrel and the coil are cut to ensure a perpendicular face to the ends of the electrode. As noted in the comments above, there is certainly no teaching that would suggest combining the *Mori* disclosure with that of the *Matthews et al.* disclosure, and it is clear that both the *McCarty et al.* and the *Chiba* reference can only be cited as an aggregation in hindsight from

the teachings of the present invention.

In relying upon a foreign patent to reject a claim, the Patent Office must construe the disclosure of the foreign reference strictly, and restrict the reference to what is **clearly** and **definitely** disclosed. *CITC Industris, Inc. v. Manow International Corp.*, 193 U.S.P.Q. 366, 368 (S.D.N.Y. 1996).

Referring to the claims, claim 16 calls for not only a winding step but also for a cutting step for cutting multiple layers of coils and a core member. Subsequently, the core member is removed and a rod is inserted and the layer is then fixed to the inserted electrode rod. As mentioned above, these features are not taught, let alone the features set forth in the dependent claims 17-20.

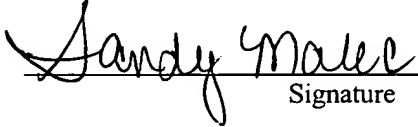
Claim 26 further defines a stabilizing step prior to the cutting step. In addition, after the rod inserting step, a welding step is used to fix the position of the end layers of coils. Again, these steps are neither taught nor suggested by the combination of references and the dependent claims 27-29 provide further distinguishing features.

The newly presented claims 30-32 further define a cutting step as providing a flat surface to the coils with the coils having been wound with the same pitch. Identical electrodes are then fixed within a light-emitting tube so that the tips of the electrodes can be accurately spaced at a length less than 2.5 mm. The additional features of dependent claims 31 and 32 are not suggested by the references of record.

In view of these comments, it is believed that the case is now in condition for allowance, and an early notification of the same is requested.

If the Examiner believes that a telephone interview will help further the prosecution of this case, the undersigned attorney can be contacted at the listed telephone number.

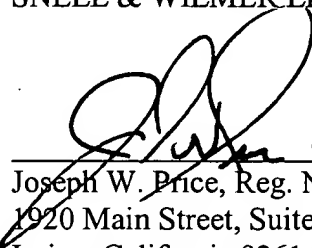
I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231 on December 19, 2002, By: Sandy Malec

  
Signature

Dated: December 19, 2002

Very truly yours,

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

New claims 30-32 have been added.